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26 SEP 1962

MEMORANDUM FOR : Director of Central Intelligence
SUBJECT : CORONA/ARGON Film Fogging Problems
REFERENCE : [REDACTED] 595-62, dated 16 August 1962

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1. Two separate problems resulting in fogging of film on CORONA/ARGON flights have come to light in recent months. The first problem is associated with CORONA only and is caused by formation of an electro-static charge during unwinding of film in the main cameras of the CORONA payload at near vacuum pressures in the satellite vehicle. This has been reported to the Director in referenced memorandum. The second problem is caused by Van Allen radiation due to the 9 July nuclear explosion. This phenomena presumably has affected both ARGON and CORONA film.

2. The first problem, electro-static discharge on CORONA main cameras, has resulted in loss of up to half of usable photography in one mission of last August and caused a temporary stand-down of operations. Extensive experimentation by the contractors has produced a configuration of electrically conductive coatings of film rollers and vehicle pressure relief valves so that on Mission 9043 the fogging from this source has been reduced to a very major extent. Work is continuing toward complete elimination of fogging from this source.

3. Film fogging from the Van Allen radiation is not severe at the lower altitude CORONA flights but increases in intensity at the higher altitudes used in ARGON flights. The ARGON film is a different and more radiation sensitive type than that used normally in CORONA which further complicates the ARGON problem. Less sensitive film cannot be used for ARGON flights.

4. Special radiation measuring instrumentation has been installed in CORONA and ARGON flights since 9 July. In two normal low altitude CORONA flights, a very few single frames showed evidence of Van Allen radiation fogging. This was so insignificant that use of additional shielding under normal conditions is deemed unnecessary. One ARGON flight at its normal altitude (roughly twice CORONA apogee) was launched but the capsule not recovered. Evidence from other flights indicates that this

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ARGON film should have been rather badly fogged. The last CORONA flight through mischance reached the higher ARGON altitude and showed significant fogging due apparently to Van Allen radiation. The vehicle was recovered after one day in orbit in order to minimize the effect and the product was usable by NFIC.

5. Radiation shielding is being developed to prevent fogging from this source on ARGON film. Lower flight altitudes are also being programmed for future ARGON operations so that one additional ARGON flight may be launched within the next month. Optimum shielding for ARGON flights is being investigated for use in spring 1963.

6. Shielding is not now necessary for CORONA main camera film, however, shielding is being studied to protect CORONA film against radiation at inadvertent abnormally high altitudes or for extended orbital lifetime under consideration for 1963 operations. Such shielding would be effective also under otherwise normal CORONA operating conditions but with significantly increased radiation levels possible in the future.

HERBERT SCOVILLE, JR.

Deputy Director

(Research)

cc: DDCI
ER

Signature Recommended:

JACK C. LEDFORD
Colonel USAF
Assistant Director, OSA

TAES/OSA/EPKIEFER:rel (25 September 1962)

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